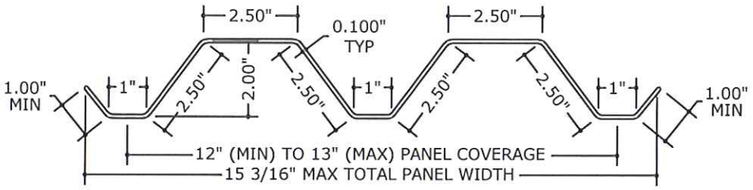
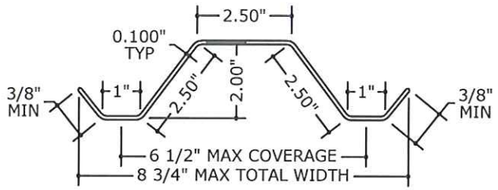
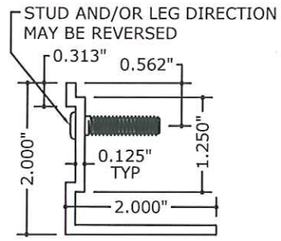
CLEAR GUARD® POLYCARBONATE STORM PANELS (Non-HVHZ)



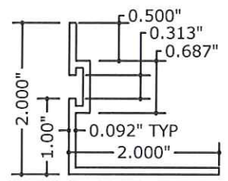
1 FULL PANEL PROFILE
3" = 1'-0" (SEE GEN NOTE 7)



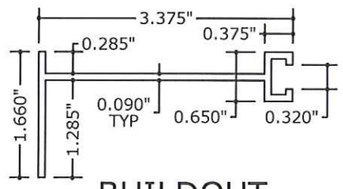
2 HALF PANEL PROFILE
3" = 1'-0" (SEE GEN NOTE 7)



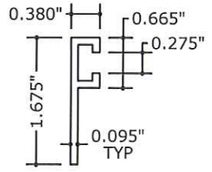
3 STUD ANGLE
6" = 1'-0"



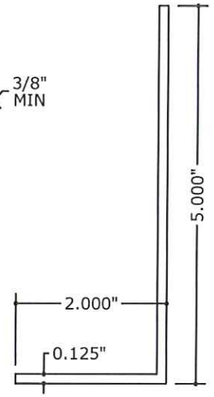
4 REVERSE 'F' ANGLE
6" = 1'-0"



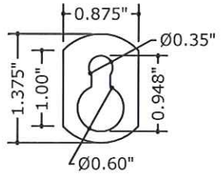
5 BUILDOUT 'F' TRACK
6" = 1'-0"



6 'F' TRACK
6" = 1'-0"

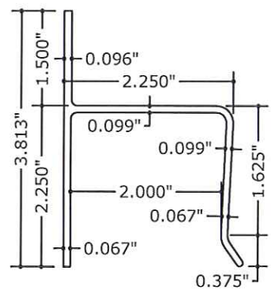


7 CLOSURE ANGLE
6" = 1'-0"

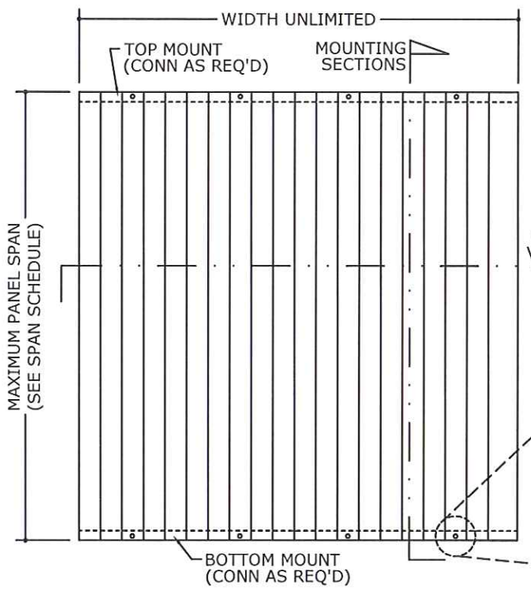


8 KEYHOLE WASHER
6" = 1'-0"

9 WASHERED WINGNUT
6" = 1'-0"

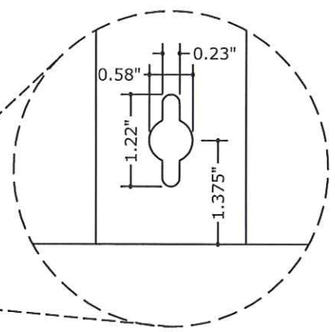


10 'H' HEADER
6" = 1'-0"



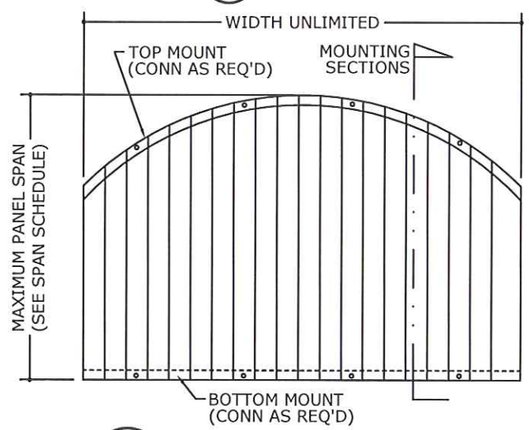
1/1 TYPICAL ELEVATION
N.T.S.

PLAN VIEWS



2/1 KEYHOLE DETAIL
N.T.S.

ALT: FIELD DRILL Ø3/8" HOLE (OR Ø5/8" HOLE W/ KEYHOLE WASHER)



3/1 ALT. ARCH TOP*
N.T.S.

GENERAL NOTES:

1) THIS SYSTEM HAS BEEN TESTED AND EVALUATED AS A LARGE MISSILE IMPACT PROTECTIVE SYSTEM IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2007 FLORIDA BUILDING CODE WITH 2009 SUPPLEMENTS AND THE 2006 INTERNATIONAL BUILDING/RESIDENTIAL CODE PER ASTM STANDARDS E330, E1886, & E1996. PANELS ARE APPROVED FOR USE IN FLORIDA OUTSIDE THE HIGH VELOCITY HURRICANE ZONE, THROUGHOUT TEXAS AND OTHER AREAS GOVERNED BY THE 2006 IBC/IRC.

2) TESTING HAS BEEN PERFORMED IN ACCORDANCE WITH THE ASTM E1996 STANDARD FOR USE IN HIGH VELOCITY WIND ZONES (WIND ZONE 4) WHERE THE BASIC WIND SPEED IS GREATER THAN 140 MPH.

3) NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS PRODUCT.

4) POSITIVE AND NEGATIVE DESIGN PRESSURES TO BE USED WITH THESE DRAWINGS SHALL BE DETERMINED BY OTHERS FOR SPECIFIC JOBS IN ACCORDANCE WITH THE GOVERNING CODE. WHEN CALCULATING PRESSURES PER ASCE 7-05, USE OF DIRECTIONALITY FACTOR Kd=0.85 IS ALLOWED.

5) THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. IF SITE CONDITIONS DEVIATE FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS TO BE USED IN CONJUNCTION WITH THIS DOCUMENT.

6) CLEAR POLYCARBONATE STORM PANELS (FULL, HALF, & DOUBLE-WIDE) MAY VARY IN "COVERAGE" WIDTH UP TO THE RESPECTIVE MAXIMA SHOWN HEREIN, PROVIDED THAT THE PANEL PROFILE HEIGHT BE MAINTAINED. PANELS SHALL BE MOUNTED WITH FASTENERS OR STUDS AT MAXIMUM SPACING SHOWN FOR EACH PROFILE.

7) ALL POLYCARBONATE PANELS SHALL BE MANUFACTURED BY TRANSPARENT PROTECTION SYSTEMS, Inc.

8) THIS PRODUCT APPROVAL IS FOR THE USE OF CLEAR POLYCARB PANELS ONLY. ALL POLYCARB PANELS SHALL BE EXTRUDED WITH THICKNESS t=0.100" (±0.010") AND SHALL BE MANUFACTURED FROM 100% SYNTHETIC THERMOPLASTIC POLYMER RESIN (UV STABILIZED). TYPICAL SYNTHETIC THERMOPLASTIC POLYMER TENSILE STRENGTH Fy=8.908 KSI, FLEXURAL STRENGTH Fby=12.90 KSI, & FLEXURAL MODULUS IS 328.7 KSI.

9) ALL EXTRUSIONS SHALL BE 6063-T6 ALUMINUM ALLOY, U.N.O.

10) PANELS SHALL BE PERMANENTLY LABELED WITH A MINIMUM OF ONE LABEL PER PANEL CONTAINING THE FOLLOWING:
TRANSPARENT PROTECTION SYSTEMS, INC.
WEST PALM BEACH, FLORIDA
NOTE: TEST STANDARDS AND PRODUCT APPROVAL NUMBERS SHALL BE INCLUDED IN PANEL LABELS.

11) STORM PANELS HAVE BEEN DESIGNED AND TESTED TO THE MAXIMUM SPANS AND CORRESPONDING LOADS SHOWN HEREIN. REFERENCE CONSTRUCTION TESTING CORPORATION (CTC OF MIAMI, FL) TEST REPORTS #04-009-FE-ASTM & #04-009-LE-ASTM, AS WELL AS HURRICANE TEST LAB (HTL OF RIVIERA BEACH, FL) TEST REPORTS #0239-0107-05, #0239-1013-07, #0239-0312-06, #0239-0110-07 & #0239-0813-06.

12) TOP & BOTTOM MOUNTING SECTIONS MAY BE INTERCHANGED AS FIELD CONDITIONS DICTATE. PANELS MAY BE MOUNTED VERTICALLY OR HORIZONTALLY AS APPLICABLE.

13) USE OF KEYHOLE WASHERS IS OPTIONAL IN CONJUNCTION WITH ANY MOUNTING CONDITION. HOLES MAY BE FIELD DRILLED AT Ø3/8" (OR Ø5/8" WITH KEYHOLE WASHER) WITH ANY FASTENER TYPE. WASHERED WINGNUTS SHALL HAVE 0.865" MINIMUM WASHER DIAMETER.

14) ALL BOLTS & WASHERS SHALL BE ZINC COATED STEEL, GALVANIZED STEEL, OR STAINLESS STEEL WITH A MINIMUM TENSILE YIELD STRENGTH OF 60 KSI.

15) THE HURRI-OUT EGRESS STORM PANEL DETAILS ARE INTENDED TO ALLOW THE POSSIBILITY OF REMOVING PANELS FROM INSIDE OF DWELLING. RESULTS MAY VARY ACCORDING TO INSTALLATION, END-USER, AND TRAINING, ETC. ENGINEERING EXPRESS AND TRANSPARENT PROTECTION SYSTEMS DO NOT ASSUME ANY RESPONSIBILITY OR LIABILITY ASSOCIATED WITH USE OF THIS INSTALLATION AND OR ITS APPLICATIONS.

*NOTE: FOR ALTERNATE ARCH TOP INSTALLATIONS, THE TOP TRACK OR U-HEADER SHALL BE CUT INTO 6" MINIMUM ADJACENT SEGMENTS. EACH SEGMENT SHALL HAVE ANCHORS SPACED PER THE ANCHOR SCHEDULE, WITH A MINIMUM OF (2) ANCHORS PER SEGMENT. ANCHORS SHALL BE 1-1/2" MIN FROM ENDS OF EACH SEGMENT AND SPACED 3" MINIMUM FROM ADJACENT ANCHORS. FOR STUDDED TRACKS ONLY, THERE SHALL BE A MINIMUM OF (1) STUD PER SEGMENT FASTENED TO THE STORM PANEL. STUDS SHALL BE LOCATED 2" MINIMUM FROM ENDS OF EACH SEGMENT.

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1/23/2009
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A FRANK L. BENNARDO, P.E., INC. INNOVATION

TPS Transparent Protection Systems, Inc.
6643 42nd Terrace North
West Palm Beach, FL 33407

CLEARGUARD POLYCARBONATE STORM PANELS
FOR USE OUTSIDE THE HVHZ
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DRWN	CHKD	DATE
ADDT'L DETAILS & SPANS	RKB	FLB	08/20/09
REVISED TDI SUBMITTAL	RKB	FLB	11/13/09
2004 FBC	CL	FLB	8/5/05
ClearMAX PROFILE ADDED	CL	FLB	2/6/06
2007 FBC REVISION	CL	KL	12/29/08

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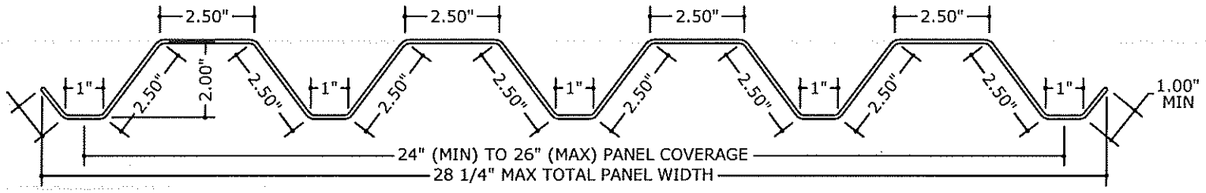
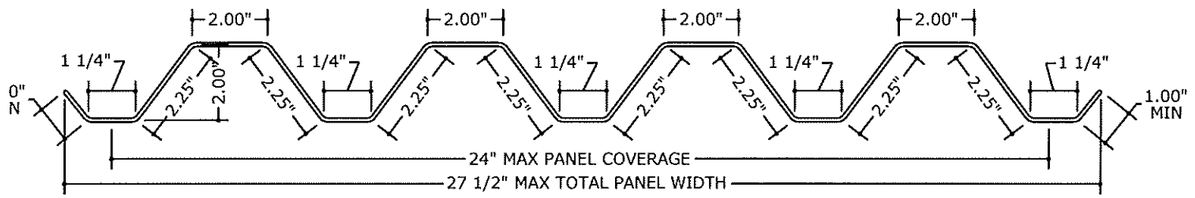
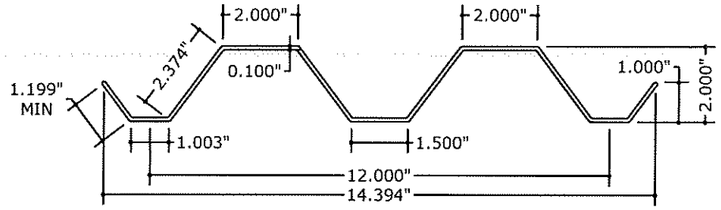
02/09/2010 - 11:25am frankb F:\01 Project Files\Transparent Protection (TPS)\2008\08-TPS-0008 ClearGuard Polycarbonate Storm Panels, Non-HVHZ (TDI)\08-TPS-0008_03c ClearGuard Polycarbonate Storm Panels, Non-HVHZ (FSA)\TDI\08-TPS-0008 ClearGuard Polycarbonate Storm Panels, Non-HVHZ (TDI).dwg



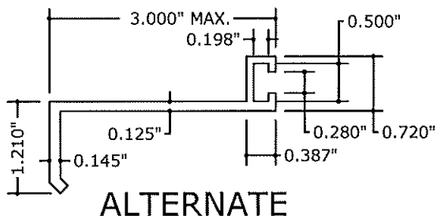
11 *"CLEARMAX™"* DOUBLE-WIDE PANEL PROFILE
3" = 1'-0" (SEE GEN NOTE 6)



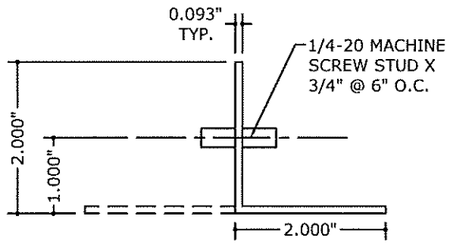
21 ALTERNATE *"CLEARMAX™"* DOUBLE-WIDE PANEL PROFILE
3" = 1'-0" (SEE GEN NOTE 6)



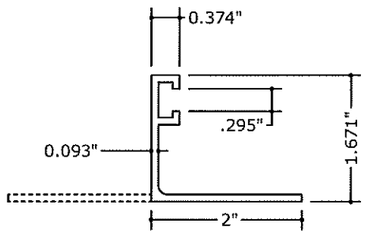
12 ALT. FULL PANEL PROFILE
N.T.S. (SEE GEN NOTE 6)



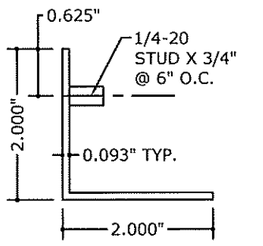
13 ALTERNATE B.O. 'F' TRACK
6" = 1'-0"



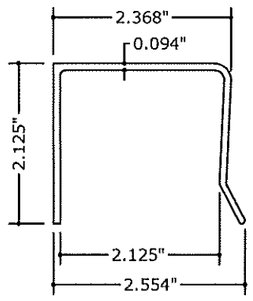
15 STUDDED ANGLE
6" = 1'-0"



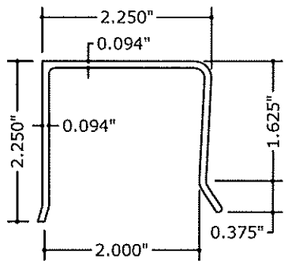
20 'F' TRACK ANGLE
6" = 1'-0"



14 ALTERNATE STUD ANGLE
6" = 1'-0"



16 U-HEADER
N.T.S. 6063-T6



17 ALTERNATE U-HEADER
N.T.S. 6063-T6

MAXIMUM PANEL SPAN SCHEDULE (POSITIVE CONN.)

LOAD (psf)	MAX SPAN (ft)
38	12'-0"
40	11'-5"
45	10'-1"
50	9'-1"
55	8'-3"
60	7'-7"
65	7'-0"
70	6'-7"
75	6'-1"
80	5'-9"
90	5'-1"
100	4'-7"
110	4'-2"
120	3'-10"

MAXIMUM PANEL SPAN SCHEDULE (W/ "H" HEADER)

LOAD (psf)	MAX SPAN (ft)
17.3	8'-7"
24.2	7'-9"
34.6	7'-0"
41.6	6'-0"
55.4	5'-0"
104	4'-0"

MAXIMUM PANEL SPAN SCHEDULE (W/ "U" HEADER)

MAX SPAN (ft)	MAX DESIGN PRESSURES POSITIVE (psf)	NEGATIVE (psf)
6'-3"	35	38
5'-3"	48	48
4'-4"	78	80

MAXIMUM SPAN SCHEDULE NOTES:

1. SPANS SHOWN IN "MAX PANEL SPAN SCHEDULES" ARE MAXIMUM ALLOWABLE SPANS AT EACH RESPECTIVE DESIGN PRESSURE.
2. THE <POSITIVE CONNECTION> SPAN SCHEDULE MAY BE USED TO DETERMINE MAXIMUM ALLOWABLE SPANS FOR PANELS INSTALLED USING ANY COMBINATION OF MOUNTING EXTRUSIONS INVOLVING A POSITIVE CONNECTION - i.e. ALL INSTALLATIONS WHICH DO NOT INCLUDE AN "H" OR "U" HEADER.
3. THE <WITH "H" HEADER> SPAN SCHEDULE SHALL BE USED FOR ALL INSTALLATIONS WHICH INCLUDE AN "H" HEADER.
4. THE <WITH "U" HEADER> SPAN SCHEDULE SHALL BE USED FOR ALL INSTALLATIONS WHICH INCLUDE A "U" HEADER
4. TABLES ARE VALID FOR PANELS MOUNTED HORIZONTALLY OR VERTICALLY. SPAN DIRECTION IS ALWAYS PERPENDICULAR TO LINE OF ANCHORAGE.

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CLEARGUARD POLYCARBONATE STORM PANELS
FOR USE OUTSIDE THE HVHZ
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DRWN	CHK'D	DATE
ADD'TL DETAILS & SPANS	RKB	FLB	08/20/09
REVISED TDI SUBMITTAL	RKB	FLB	11/13/09
2004 FBC	CL	FLB	8/5/05
ClearMAX PROFILE ADDED	CL	FLB	2/6/06
2007 FBC REVISION	KL	CL	12/29/08

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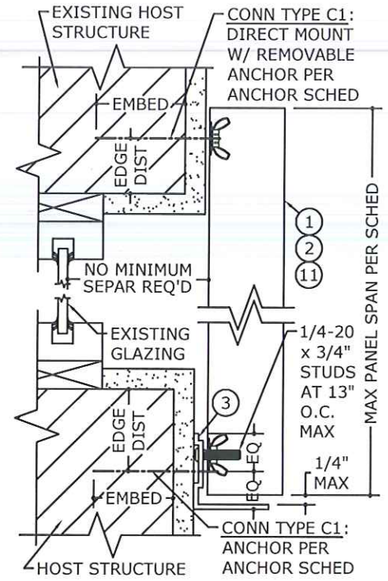
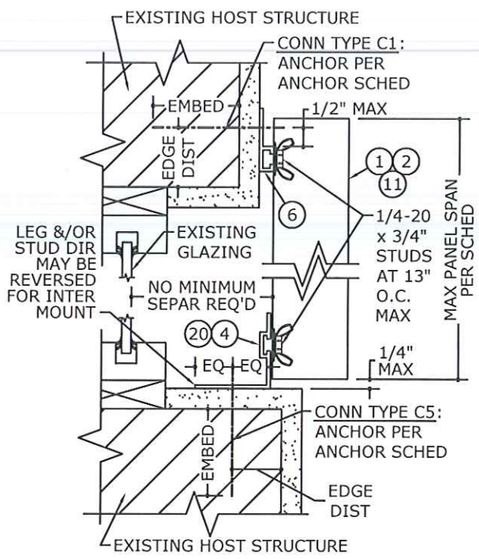
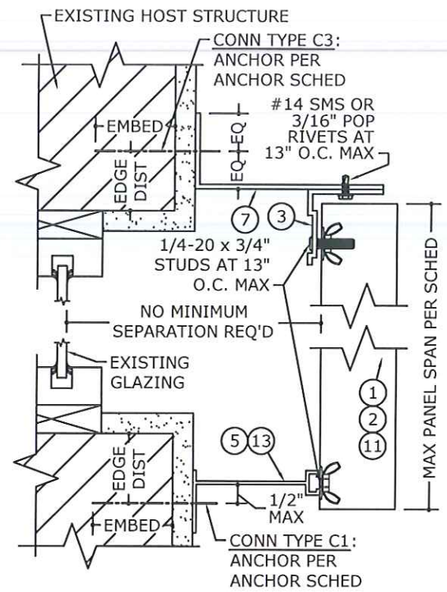
02/09/2010 - 11:25am frankb F:\01 Project Files\Transparent Protection (TPS)\2008\08-TPS-0008_03c ClearGuard Polycarbonate Storm Panels, Non-HVHZ (TDI).dwg



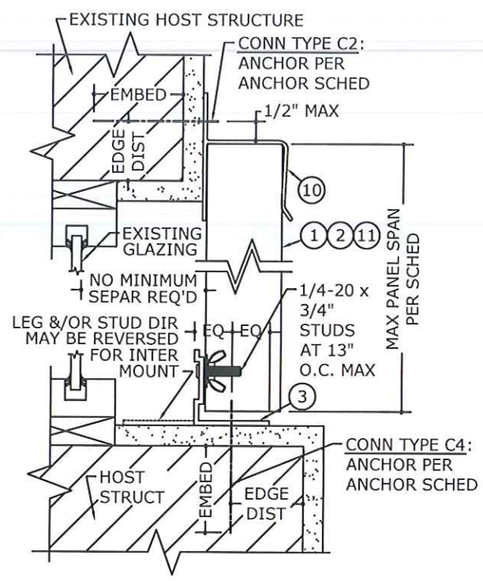
1/3 MOUNTING SECTION
3" = 1'-0" VERT SECTION



2/3 MOUNTING SECTION
3" = 1'-0" VERT SECTION



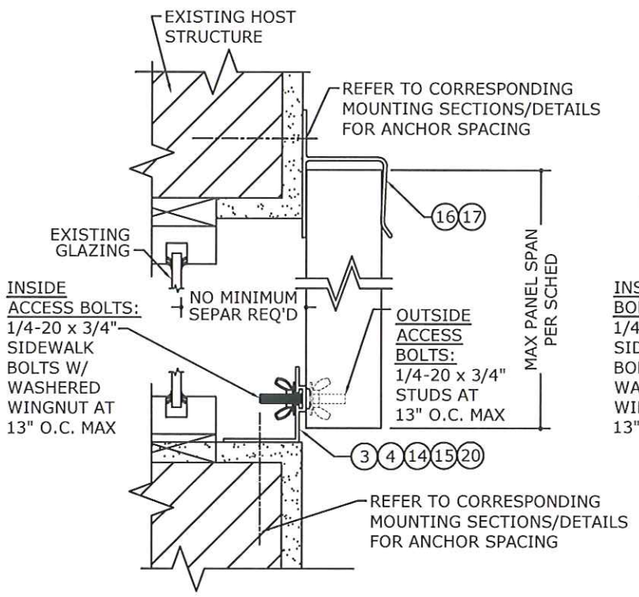
3/3 MOUNTING SECTION
3" = 1'-0" VERT SECTION



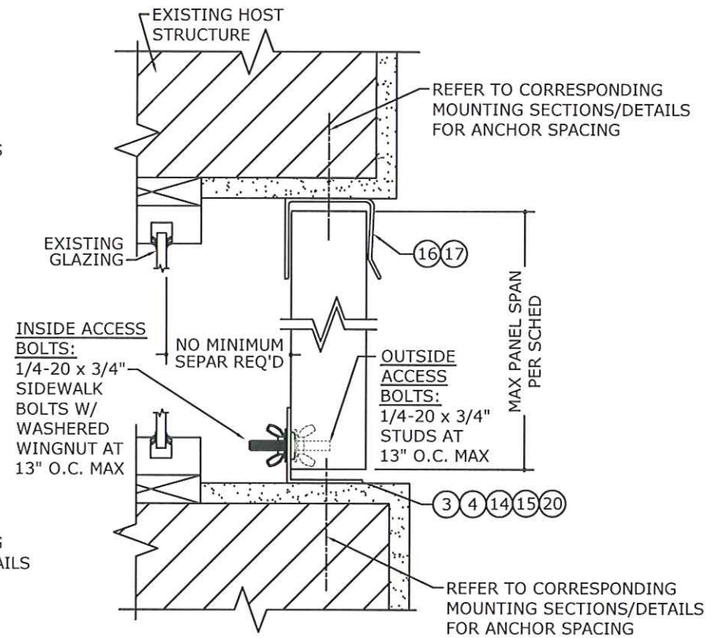
4/3 MOUNTING SECTION
3" = 1'-0" VERT SECTION

HURRI-OUT™ EGRESS STORM PANEL DETAILS*

(*NOTE: SEE GENERAL NOTE #15)

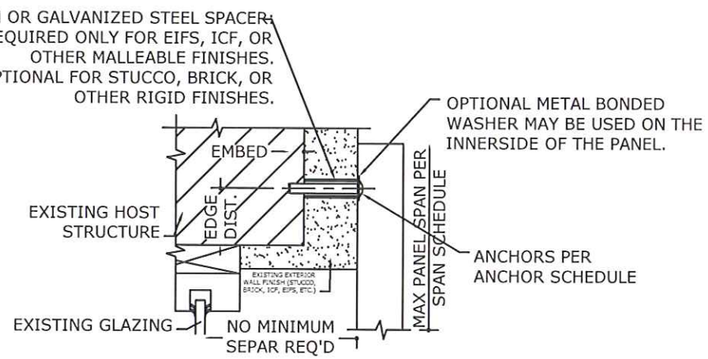


5/3 MOUNTING SECTION
N.T.S. VERT SECTION



6/3 MOUNTING SECTION
N.T.S. VERT SECTION

NOTE: SHUTTER SYSTEM MAY BE ANCHORED THROUGH EXTERIOR WALL FINISH TO HOST STRUCTURE WITH ANY MOUNTING CONDITION SHOWN HEREIN.



7/3 MOUNTING SECTION THRU EXTERIOR WALL FINISH (BRICK, ICF, EIFS, ETC.)
N.T.S. VERT SECTION

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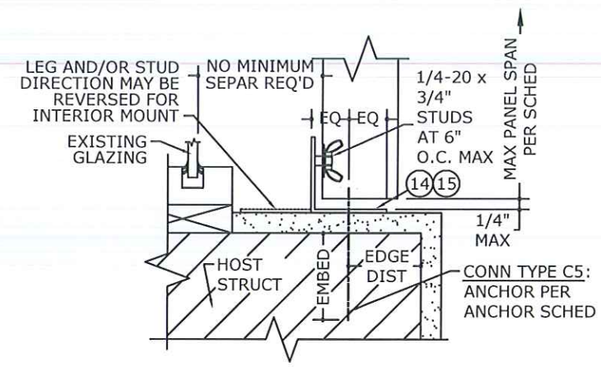
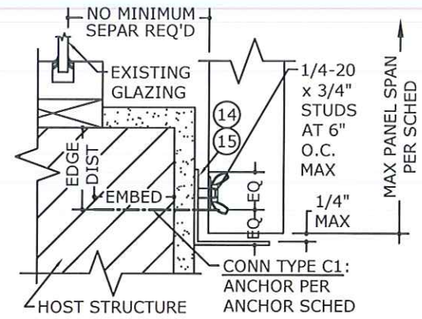
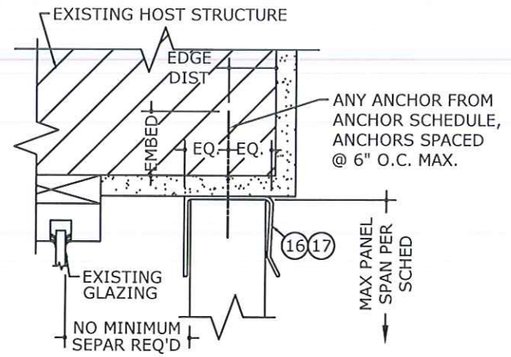


1/4 MOUNTING SECTION
3" = 1'-0" VERT SECTION

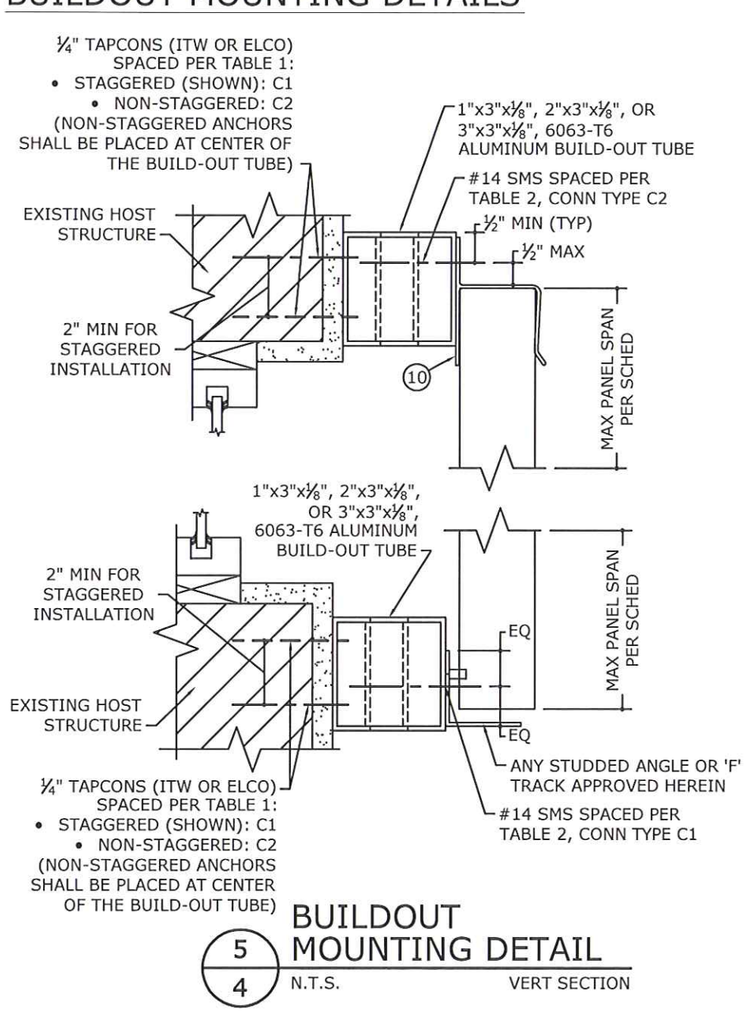


2/4 MOUNTING SECTION
3" = 1'-0" VERT SECTION



3/4 MOUNTING SECTION
N.T.S. VERT SECTION

BUILDOUT MOUNTING DETAILS



5/4 BUILDOUT MOUNTING DETAIL
N.T.S. VERT SECTION

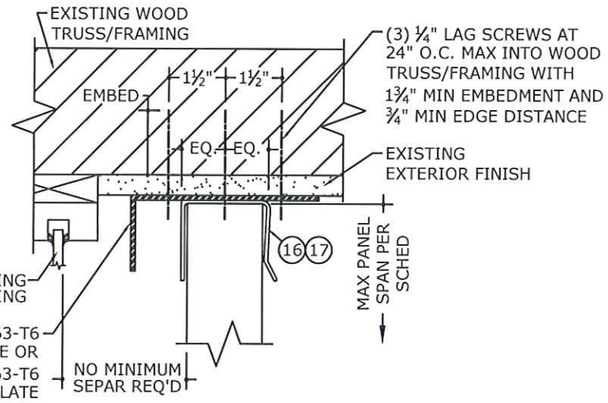
TABLE 1*: BUILDOUT ONLY

HOST STRUCT.	LOAD (psf)	Spans Up To 6'-0"		Spans Up To 8'-6"		Spans Up To 11'-4"	
		CONN TYPE		CONN TYPE		CONN TYPE	
		C1	C2	C1	C2	C1	C2
CONCRETE	30	13.0"	13.0"	13.0"	13.0"	13.0"	11.8"
	38	13.0"	13.0"	13.0"	12.4"	13.0"	9.3"
	47	13.0"	13.0"	13.0"	10.1"	13.0"	8.5"
	54	13.0"	12.4"	13.0"	8.8"	13.0"	8.5"
	120	13.0"	8.5"	13.0"	8.5"	13.0"	8.5"
HOLLOW BLOCK	30	13.0"	8.2"	9.6"	5.8"	7.2"	4.3"
	38	10.8"	6.5"	7.6"	4.6"	5.7"	3.4"
	47	8.7"	5.2"	6.2"	3.7"	5.2"	3.1"
	54	7.6"	4.6"	5.4"	3.2"	5.2"	3.1"
	120	5.2"	3.1"	5.2"	3.1"	5.2"	3.1"
WOOD	30	13.0"	8.5"	10.0"	6.0"	7.5"	4.5"
	38	11.2"	6.7"	7.9"	4.7"	5.9"	3.6"
	47	9.1"	5.4"	6.4"	3.8"	5.4"	3.3"
	54	7.9"	4.7"	5.6"	3.3"	5.4"	3.3"
	120	5.4"	3.3"	5.4"	3.3"	5.4"	3.3"

TABLE 2*: BUILDOUT ONLY

LOAD (psf)	Spans Up To 6'-0"		Spans Up To 8'-6"		Spans Up To 11'-4"	
	CONN TYPE		CONN TYPE		CONN TYPE	
	C1	C2	C1	C2	C1	C2
30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
38	13.0"	13.0"	13.0"	13.0"	11.3"	8.1"
47	13.0"	13.0"	12.2"	9.4"	10.3"	6.8"
54	13.0"	13.0"	10.6"	7.2"	10.3"	6.8"
120	10.3"	6.8"	10.3"	6.8"	10.3"	6.8"

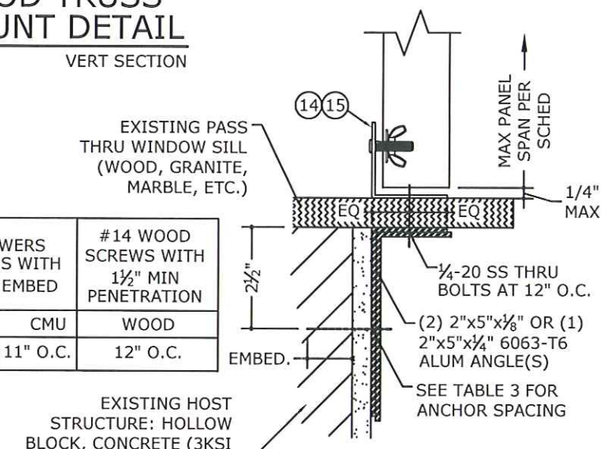
NOTES:
1. TABLE 1 AND 2 APPLY ONLY TO BUILDOUT MOUNTING DETAIL (7/3).
2. TAPCONS SHALL BE INSTALLED WITH THE FOLLOWING MINIMUM EMBEDMENT:
   - TO CONCRETE: 1¾" MIN
   - TO HOLLOW BLOCK: 1¼" MIN
   - TO WOOD: 1½" MIN
3. REFER TO SHT 6 FOR ADDITIONAL ANCHOR NOTES.
4. THESE MOUNTING CONDITIONS MAY BE USED INDEPENDENTLY OF ONE ANOTHER AND IN CONJUNCTION WITH OTHER MOUNTING CONDITIONS/DETAILS DEPICTED HEREIN.



6/4 WOOD TRUSS MOUNT DETAIL
N.T.S. VERT SECTION

TABLE 3:

¼" ITW TAPCONS WITH 1¼" MIN EMBED		¼" POWERS CALK-INS WITH ⅞" MIN EMBED		#14 WOOD SCREWS WITH 1½" MIN PENETRATION
CONC	CMU	CONC	CMU	WOOD
12" O.C.	8" O.C.	12" O.C.	11" O.C.	12" O.C.



7/4 PASS THRU WINDOW DETAIL
N.T.S. VERT SECTION

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11/23/2009
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CERT OF REG. #F-11383
A FRANK L. BENNARDO, P.E., INC. INNOVATION

TPS Transparent Protection Systems, Inc.
6643 42nd Terrace North
West Palm Beach, FL 33407

CLEARGUARD POLYCARBONATE STORM PANELS
FOR USE OUTSIDE THE HVHZ
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DRWN	CHKD	DATE
ADD'TL DETAILS & SPANS	RKB	FLB	08/20/09
REVISED TDI SUBMITTAL	RKB	FLB	11/13/09
2004 FBC	CL	FLB	8/5/05
ClearMAX PROFILE ADDED	CL	FLB	2/6/06
2007 FBC REVISION	KL	CL	12/29/08

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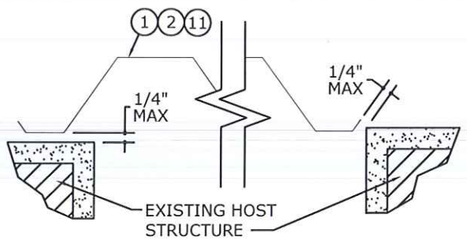
CLOSURE DETAILS



1/5 WALL MOUNT CLOSURE
3" = 1'-0" PLAN VIEW

MINIMUM SPAN SCHEDULE

ONE (1) CLOSURE AT TOP OR BOTTOM

TOP OR BOTTOM WITH CLOSURE	TOP OR BOTTOM MOUNT WITHOUT CLOSURE							
	DIRECT MOUNT	STUD ANGLE (WALL MOUNT)	"F" TRACK	REVERSE "F" ANGLE	B.O. 2x5 + STUD ANGLE	B.O. "F" TRACK	"H" HEADER	STUD ANGLE (TRAP MOUNT)
DIRECT MOUNT	32"	30"	33"	30"	30"	32"	30"	30"
STUD ANGLE (WALL MOUNT)	32"	30"	33"	30"	30"	32"	30"	30"
"F" TRACK	33"	30"	35"	30"	30"	33"	30"	30"
REVERSE "F" ANGLE	32"	30"	33"	30"	30"	32"	30"	30"
B.O. 2x5 + STUD ANGLE	32"	30"	33"	30"	30"	32"	30"	30"
B.O. "F" TRACK	32"	30"	33"	30"	30"	32"	30"	30"
"H" HEADER	30"	30"	30"	30"	30"	30"	30"	30"
STUD ANGLE (TRAP MOUNT)	32"	30"	33"	30"	30"	32"	30"	30"

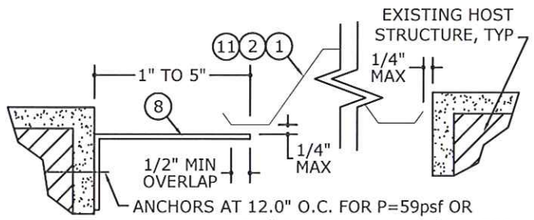
MINIMUM SPAN SCHEDULE

NO TOP/BOTTOM CLOSURES

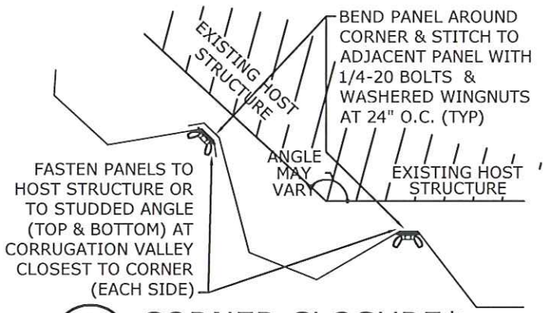
TOP MOUNT	BOTTOM MOUNT							
	DIRECT MOUNT	STUD ANGLE (WALL MOUNT)	"F" TRACK	REVERSE "F" ANGLE	B.O. 2x5 + STUD ANGLE	B.O. "F" TRACK	"H" HEADER	STUD ANGLE (TRAP MOUNT)
DIRECT MOUNT	53"	32"	55"	32"	32"	53"	30"	32"
STUD ANGLE (WALL MOUNT)	32"	30"	33"	30"	30"	32"	30"	30"
"F" TRACK	55"	33"	57"	33"	33"	55"	30"	33"
REVERSE "F" ANGLE	32"	30"	33"	30"	30"	32"	30"	30"
B.O. 2x5 + STUD ANGLE	32"	30"	33"	30"	30"	32"	30"	30"
B.O. "F" TRACK	53"	32"	55"	32"	32"	53"	30"	32"
"H" HEADER	30"	30"	30"	30"	30"	30"	30"	30"
STUD ANGLE (TRAP MOUNT)	32"	30"	33"	30"	30"	32"	30"	30"

MINIMUM SPAN SCHEDULE NOTES:

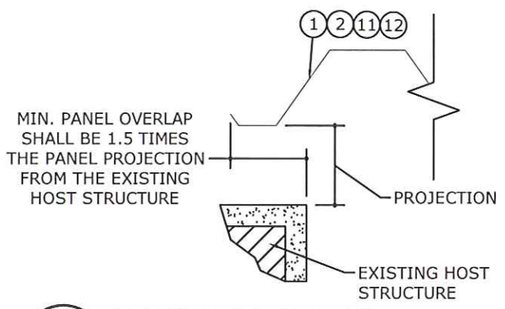
1. SPANS SHOWN ABOVE ARE MINIMUM ALLOWABLE SPANS BASED ON ANY COMBINATION OF MOUNTING CONDITIONS AT TOP OR BOTTOM. PANEL LENGTHS LESS THAN THOSE NOTED IN TABLES ABOVE ARE NOT ACCEPTABLE.
2. NO SEPARATION FROM GLASS IS REQUIRED WHEN PANEL LENGTH IS GREATER THAN THAT NOTED FOR RESPECTIVE MOUNTING COMBINATIONS ABOVE.
3. SIDE CLOSURES REQUIRED IF GAP BETWEEN PANEL AND STRUCTURE EXCEEDS DISTANCE SHOWN IN HORIZONTAL SECTION DETAILS (REF. DETAILS 6/3, 7/3 AND 9/3).
4. TABLES ABOVE ARE VALID FOR PANELS MOUNTED HORIZONTALLY OR VERTICALLY.
5. TOP/BOTTOM CLOSURES MAY CONSIST OF NON-STRUCTURAL 28ga (0.018" MIN) GALV STEEL OR 0.022" MIN SHEET ALUMINUM OF ALLOY 5052-H32 OR 3004-H34. REFERENCE DETAILS HEREIN FOR DEPICTION OF TOP/BOTTOM CLOSURE MOUNTING REQUIREMENTS.
6. STORM PANELS MAY BE INSTALLED WITH A 12" MINIMUM SPAN WHEN INSTALLED WITH A CLOSURE ANGLE AT BOTH TOP AND BOTTOM.



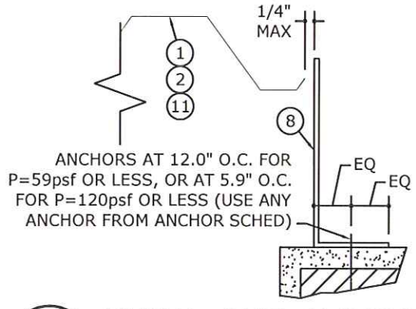
2/5 TRAP MOUNT CLOSURE
3" = 1'-0" PLAN VIEW



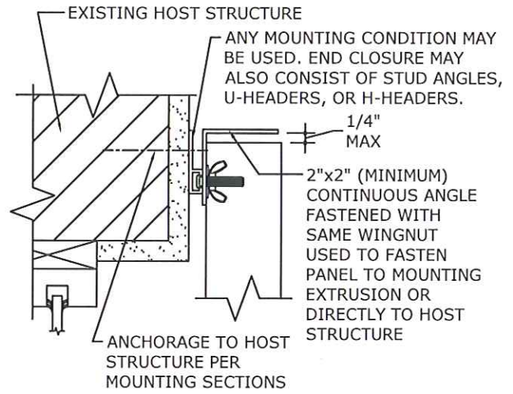
3/5 CORNER CLOSURE*
N.T.S. PLAN VIEW
***NOTE:** PANELS MAY BE BUTTED TOGETHER AVOIDING A BEND, WITHOUT STITCHING (¼" MAX GAP)



4/5 PANEL OVERLAP
N.T.S. PLAN VIEW



5/5 BUILD-OUT CLOSURE
3" = 1'-0" PLAN VIEW



6/5 TOP/BOTTOM CLOSURE
N.T.S. VERT SECTION

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ADDT'L DETAILS & SPANS	RKB	FLB	08/20/09
REVISED TDI SUBMITTAL	RKB	FLB	11/13/09
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ClearMAX PROFILE ADDED	CL	FLB	2/6/06
2007 FBC REVISION	KL	CL	12/29/08

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ANCHOR SCHEDULES

HOST STRUCT.	ANCHOR	LOAD (psf)	2" MIN EDGE DISTANCE															
			Spans Up To 6'-0" CONN TYPE					Spans Up To 8'-6" CONN TYPE					Spans Up To 12'-0" CONN TYPE				
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5
CONCRETE	1/4" TAPCON (ELCO OR ITW) WITH 1-3/4" EMBED (3192psi MIN CONC)	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.0"	10.6"	13.0"	11.9"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.9"	13.0"	13.0"	13.0"	13.0"	9.8"	10.3"	13.0"	11.6"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	9.9"	10.5"	13.0"	11.7"	13.0"	9.8"	10.3"	13.0"	11.6"
		120	13.0"	9.8"	10.3"	13.0"	11.6"	13.0"	9.8"	10.3"	13.0"	11.6"	13.0"	9.8"	10.3"	13.0"	11.6"
	1/4" ELCO PANELMATE WITH 1-3/4" MIN EMBED (3350psi MIN CONC) *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		120	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
	1/4-20 ALL POINTS SOLID-SET WITH 7/8" MIN EMBED (3000psi MIN CONC) *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		120	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
	1/4-20 POWERS CALK-IN WITH 7/8" MIN EMBED (2000psi MIN CONC) *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	11.3"	11.3"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.6"	12.6"	13.0"	13.0"	13.0"	8.9"	8.9"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.2"	10.2"	13.0"	13.0"	13.0"	8.8"	8.8"
		54	13.0"	13.0"	13.0"	12.5"	12.5"	13.0"	13.0"	13.0"	8.9"	8.9"	13.0"	13.0"	13.0"	8.8"	8.8"
		120	13.0"	13.0"	13.0"	8.8"	8.8"	13.0"	13.0"	13.0"	8.8"	8.8"	13.0"	13.0"	13.0"	8.8"	8.8"
HOLLOW BLOCK	1/4" TAPCON (ELCO OR ITW) WITH 1-1/4" EMBED	30	13.0"	13.0"	13.0"	13.0"	13.0"	9.6"	9.6"	9.6"	9.6"	9.6"	6.8"	6.0"	6.8"	6.8"	6.8"
		38	10.8"	10.8"	10.8"	10.8"	10.8"	7.6"	7.6"	7.6"	7.6"	7.6"	5.4"	3.7"	3.9"	5.4"	4.4"
		47	8.7"	8.7"	8.7"	8.7"	8.7"	6.2"	4.7"	5.6"	6.2"	5.7"	5.3"	3.6"	3.8"	5.3"	4.3"
		54	7.6"	7.6"	7.6"	7.6"	7.6"	5.4"	3.6"	3.8"	5.4"	4.3"	5.3"	3.6"	3.8"	5.3"	4.3"
		120	5.3"	3.6"	3.8"	5.3"	4.3"	5.3"	3.6"	3.8"	5.3"	4.3"	5.3"	3.6"	3.8"	5.3"	4.3"
	1/4" ELCO PANELMATE (FEMALE, MALE, OR PLUS) W/ 1-1/4" MIN EMBED *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	9.2"	8.0"	9.2"	9.2"	9.2"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	10.2"	10.2"	10.2"	10.2"	10.2"	7.2"	4.9"	5.2"	7.2"	5.9"
		47	11.7"	11.7"	11.7"	11.7"	11.7"	8.3"	6.4"	7.6"	8.3"	7.7"	7.2"	4.8"	5.1"	7.2"	5.7"
		54	10.2"	10.2"	10.2"	10.2"	10.2"	7.2"	4.9"	5.2"	7.2"	5.8"	7.2"	4.8"	5.1"	7.2"	5.7"
		120	7.2"	4.8"	5.1"	7.2"	5.7"	7.2"	4.8"	5.1"	7.2"	5.7"	7.2"	4.8"	5.1"	7.2"	5.7"
	1/4-20 ALL POINTS SOLID-SET WITH 7/8" MIN EMBED *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.8"	13.0"	13.0"	13.0"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.6"	13.0"	13.0"	13.0"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.7"	13.0"	13.0"	13.0"	13.0"	12.6"	13.0"	13.0"	13.0"
		120	13.0"	12.6"	13.0"	13.0"	13.0"	13.0"	12.6"	13.0"	13.0"	13.0"	13.0"	12.6"	13.0"	13.0"	13.0"
	1/4-20 POWERS CALK-IN WITH 7/8" MIN EMBED *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	11.7"	10.2"	11.7"	10.4"	10.4"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	11.6"	11.6"	9.3"	6.3"	6.7"	8.2"	7.5"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	10.6"	8.1"	9.7"	9.4"	9.4"	9.2"	6.2"	6.5"	8.1"	7.3"
		54	13.0"	13.0"	13.0"	11.6"	11.6"	9.2"	6.2"	6.6"	8.2"	7.4"	9.2"	6.2"	6.5"	8.1"	7.3"
		120	9.2"	6.2"	6.5"	8.1"	7.3"	9.2"	6.2"	6.5"	8.1"	7.3"	9.2"	6.2"	6.5"	8.1"	7.3"

HOST STRUCT.	ANCHOR	LOAD (psf)	3/4" MIN EDGE DISTANCE															
			Spans Up To 6'-0" CONN TYPE					Spans Up To 8'-6" CONN TYPE					Spans Up To 12'-0" CONN TYPE				
			C1	C2	C3	C4	C5	C1	C2	C3	C4	C5	C1	C2	C3	C4	C5
WOOD (G=0.55 MIN)	1/4" TAPCON (ELCO OR ITW) OR #14 WOOD SCREW W/ 1-1/2" EMBED	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		120	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
	1/4" ELCO PANELMATE (FEMALE, MALE, OR PLUS) W/ 1-7/8" MIN EMBED *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		120	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
	7/16" WOOD BUSHING W/ 7/8" MIN EMBED & 1/4-20 S.S. MACHINE SCREW *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.2"	8.3"	8.8"	12.2"	9.9"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.7"	12.7"	13.0"	12.9"	12.1"	8.1"	8.6"	12.1"	9.6"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	12.1"	8.2"	8.7"	12.1"	9.7"	12.1"	8.1"	8.6"	12.1"	9.6"
		120	12.1"	8.1"	8.6"	12.1"	9.6"	12.1"	8.1"	8.6"	12.1"	9.6"	12.1"	8.1"	8.6"	12.1"	9.6"
	1/4" LAG SCREW OR HANGAR BOLT W/ MIN 2-3/32" THREAD PENETR'N THREAD PENETR *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	11.6"	11.6"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	9.2"	9.2"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.5"	10.5"	13.0"	13.0"	13.0"	9.1"	9.1"
		54	13.0"	13.0"	13.0"	12.9"	12.9"	13.0"	13.0"	13.0"	9.1"	9.1"	13.0"	13.0"	13.0"	9.1"	9.1"
		120	13.0"	13.0"	13.0"	9.1"	9.1"	13.0"	13.0"	13.0"	9.1"	9.1"	13.0"	13.0"	13.0"	9.1"	9.1"
WOOD (G=0.42 MIN)	1/4" TAPCON (ELCO OR ITW) OR #14 WOOD SCREW W/ 1-1/2" EMBED	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.5"	11.1"	11.1"	11.1"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.6"	12.6"	13.0"	10.2"	10.8"	10.9"	10.9"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.3"	10.9"	11.0"	11.0"	13.0"	10.2"	10.8"	10.9"	10.9"
		120	13.0"	10.2"	10.8"	10.9"	10.9"	13.0"	10.2"	10.8"	10.9"	10.9"	13.0"	10.2"	10.8"	10.9"	10.9"
	1/4" ELCO PANELMATE (FEMALE, MALE, OR PLUS) W/ 1-7/8" MIN EMBED *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.3"	12.3"
		47	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.1"	12.1"
		54	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	12.2"	12.2"	13.0"	13.0"	13.0"	12.1"	12.1"
		120	13.0"	13.0"	13.0"	12.1"	12.1"	13.0"	13.0"	13.0"	12.1"	12.1"	13.0"	13.0"	13.0"	12.1"	12.1"
	1/4" LAG SCREW OR HANGAR BOLT W/ MIN 2-3/32" THREAD PENETR'N THREAD PENETR *	30	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	9.8"	9.8"
		38	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	13.0"	10.9"	10.9"	13.0"	13.0"	13.0"	7.7"	7.7"
		47	13.0"	13.0"	13.0"	12.5"	12.5"	13.0"	13.0"	13.0"	8.8"	8.8"	13.0"	13.0"	13.0"	7.6"	7.6"
		54	13.0"	13.0"	13.0"	10.9"	10.9"	13.0"	13.0"	13.0"	7.7"	7.7"	13.0"	13.0"	13.0"	7.6"	7.6"
		120	13.0"	13.0"	13.0"	7.6"	7.6"	13.0"	13.0"	13.0"	7.6"	7.6"	13.0"	13.0"	13.0"	7.6"	7.6"

ANCHOR SCHEDULE NOTES:

1. 1/4" TAPCONS MAY BE BY ITW OR BY ELCO. "ELCO PANELMATE" ANCHORS MAY BE MALE, FEMALE, OR PANELMATE PLUS, AS ILLUSTRATED. HEAD STYLE MAY BE STD 13/32" OR WASHERED 5/8" HEX HEAD.
2. ENSURE MINIMUM 2" EDGE DISTANCE FOR ALL ANCHORS TO CONCRETE & TO HOLLOW BLOCK. EDGE DISTANCE OF 3/4" IS ACCEPTABLE FOR ANCHORS TO WOOD.
3. MINIMUM EMBEDMENT SHALL BE AS NOTED IN ANCHOR SCHEDULE. MINIMUM EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER WALL FINISHES.
4. ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS.
5. WHERE EXISTING STRUCTURE IS WOOD FRAMING, EXISTING CONDITIONS MAY VARY. FIELD VERIFY THAT FASTENERS ARE INTO ADEQUATE WOOD FRAMING MEMBERS, NOT INTO PLYWOOD.
6. WHERE ANCHORS FASTEN TO NARROW FACE OF STUD FRAMING, ANCHOR SHALL BE LOCATED IN CENTER OF NOMINAL 2x4 (MIN) WOOD STUD (i.e. 3/4" EDGE DISTANCE IS ACCEPTABLE FOR ANCHORS TO WOOD FRAMING). WOOD STUD SHALL BE "SOUTHERN PINE" (FOR G=0.55 OR GREATER DENSITY) OR "SPRUCE-PINE-FIR" (FOR G=0.42 OR GREATER DENSITY).
7. ANCHOR SCHEDULE APPLIES FOR ALL PRODUCTS CERTIFIED HEREIN, BUT ONLY PROVIDES MAXIMUM ALLOWABLE ANCHOR SPACING. MAXIMUM ALLOWABLE SPANS AND PRESSURES INDICATED IN SPAN SCHEDULE SHALL APPLY.
8. MACHINE SCREWS SHALL HAVE MINIMUM OF 1/2" ENGAGEMENT OF THREADS IN BASE ANCHOR AND MAY HAVE EITHER A PAN HEAD, TRUSS HEAD, OR WAFER HEAD ("SIDEWALK BOLT") U.N.O.
9. * DESIGNATES REMOVABLE ANCHORS. PANELS SHALL BE MOUNTED DIRECTLY TO THE HOST STRUCTURE ONLY WITH THESE ANCHORS, LOCATED AT KEYHOLES AND LESS THAN OR EQUAL TO ALLOWABLE SPACING SHOWN IN ANCHOR SCHEDULE.

FRANK L. BENNARDO, P.E.
#PE60024
STATE OF FLORIDA
FRANK L. BENNARDO
60024
LICENSED PROFESSIONAL ENGINEER
CERTIFICATE OF AUTHORIZATION #28106
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A FRANK L. BENNARDO, P.E., INC. INNOVATION

TPS Transparent Protection Systems, Inc.
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West Palm Beach, FL 33407

CLEARGUARD POLYCARBONATE STORM PANELS
FOR USE OUTSIDE THE HVHZ
TEXAS DEPARTMENT OF INSURANCE

REMARKS	DRWN	CHKD	DATE
ADD'TL DETAILS & SPANS	RKB	FLB	08/20/09
REVISED TDI SUBMITTAL	RKB	FLB	11/13/09
2004 FBC	CL	FLB	8/5/05
ClearMAX PROFILE ADDED	CL	FLB	2/6/06
2007 FBC REVISION	KL	CL	12/29/08

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02/09/2010 - 11:27am frankb F:\01 Project Files\Transparent Protection (TPS)\2008\08-TPS-0008_03c ClearGuard Polycarbonate Storm Panels, Non-HVHZ (TDI).dwg